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09/536,275	03/27/2000	Arthur W. Wang	PD-990213	3726

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EXAMINER

NGUYEN, DAVID Q

ART UNIT PAPER NUMBER

2682

DATE MAILED: 03/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/536,275

Applicant(s)

WANG, ARTHUR W.

Examiner

David Q Nguyen

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 27, "A method as recited in claim 27" on line 1 is indefinite. For purpose of examining, the examiner believes that claim 27 depends on claim 25. Correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,3-7, 9-10,12-15,17,19-20,22-23, 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taormina et al. (US patent Number 6257526) in view of Roedere et al. (US Patent Number 5151706).

Regarding claim 1, Taormina discloses a communications system comprising:

Art Unit: 2682

a plurality of regional ground stations (fig. 1); and a plurality of user terminals with the service area receiving communication signals from the satellite; a plurality of satellites located in an elliptical sub-geostationary orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (fig. 2, fig. 3A; col. 4, lines 25-63). Taormina is silent to disclose said satellites generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area. However, Roedere discloses generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area (see col. 6, lines 43-51; col. 7, lines 8-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Roedere to Taormina in order to provide service users continuously.

Regarding claim 12, Taormina discloses a communication system comprising a first plurality of satellites located in an elliptical subgeostationary orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see explanation in claim 1); said first plurality of satellites providing a first system capacity; and a second plurality of satellites deployed after said first plurality of satellites, said second plurality of satellites providing a second system capacity greater than the first system capacity (see fig. 3D; col. 5, lines 25-40). Taormina is silent to disclose said satellites generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area. However, Roedere discloses generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area (see col. 6, lines 43-51; col. 7, lines 8-10). Therefore, it would have been obvious to one of ordinary

Art Unit: 2682

skill in the art at the time the invention was made to modify the above teaching of Roedere to Taormina in order to provide service users continuously.

Regarding claims 3 and 13, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses that the uniform cells are substantially fixed within the service area (see col. 2, lines 41-42).

Regarding claims 4 and 14, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses the plurality of beams providing equal capacity density to the cell size (see fig. 6; col. 5, lines 66-67; col. 6, lines 1-5).

Regarding claims 5 and 15, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses the minimum elevation angle is greater than 10 degrees in the service area (see col. 6, lines 25-27).

Regarding claim 6, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses within said service area is a primary market area (see fig. 1).

Regarding claims 7 and 17, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses the plurality of satellites comprising a phase array to form said plurality of beams (see col. 8, lines 23-35).

Regarding claims 9-10 and 19-20, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses that the plurality comprises less than 9 satellites; and the plurality comprises 4 satellites (see col. 8, lines 25-28).

Regarding claim 22, Taormina discloses a method of providing a system of inclined eccentric sub-geosynchronous satellite orbits above the earth, the method comprising: defining at least one geographic service area within which satellite coverage is to be provided, said service area having a minimum elevation angle thereabove (see fig. 2; fig. 4, fig.5 and abstract; col. 4, lines 45-67; col. 6, lines 3-6); defining at least two satellite above the minimum service area having a first satellite and a second respectively therein (see fig. 2; fig. 4, fig.5 and abstract; col. 4, lines 45-67; col. 6, lines 3-6); operate said the first satellite to generate a plurality of fixed cells relative to the earth (see fig. 2, 3 and 4); operating said second satellite to generate the plurality of fixed cells (see fig.3 and 4 and fig. 2). Taormina is silent to disclose varying the beamwidth of the beams generated during operation in an active arc of an orbit. However, Roedere discloses generating a plurality of beams with variable beam widths (see col. 6, lines 43-51; col. 7, lines 8-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Roedere to Taormina in order to provide service users continuously.

Regarding claim 23, Taormina discloses a method modified by Roedere comprising all of the limitations as claimed. Taormina also discloses wherein said satellite orbits are inclined eccentric sub-geosynchronous orbit (see fig. 2 and all fig. 3).

Regarding claim 25, Taormina discloses a method of developing a customized satellite constellation comprising the step of: developing a first satellite constellation having a first set of satellites having regional coverage having a first service area, wherein said first constellation comprises a first plurality of satellites located in an elliptical sub-geostationary orbit with respect to the earth said satellites operating in a service area in a synchronized manner to provide

Art Unit: 2682

continuous coverage to said service area (see explanation in claim 1); launching a second set of satellite to form a second satellite constellation having primary market coverage in cooperation with said first set of satellites to have a second service area greater than said first service area (see explanation in claims 1 and 12; see fig. 2 and 3d; col. 4, lines 46-55; col. 5; lines 24-40).

Taormina is silent to disclose said satellites generating a plurality of beams with variable beam widths formed as a function of orbit position to obtain a substantially uniform cell size covering said service area. However, Roedere discloses generating a plurality of beams with variable beam widths formed as a function of orbit position to obtain a substantially uniform cell size covering said service area (see col. 6, lines 43-51; col. 7, lines 8-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Roedere to Taormina in order to provide service users continuously.

Regarding claims 26 and 27, Taormina discloses a method of developing a customized satellite constellation modified by Roedere comprising all of the limitations as claimed.

Taormina also discloses launching a third set of satellites to form a third satellite constellation having optimized landmass coverage in cooperation with said first set of satellites and said second; the first constellation, the second constellation and the third constellation comprise SGSO satellites (see explanation in claim 25, fig. 1 and 3D).

Regarding claims 28-31, Taormina discloses a method of developing a customized satellite constellation modified by Roedere comprising all of the limitations as claimed.

Taormina also discloses the first and second set of satellites are non-interfering with GSO satellites; the first plurality of satellites and the second set of satellites have active arcs sized to

Art Unit: 2682

provide continuous coverage to said second service area and be non-interfering with GSO satellites (see col. 4, lines 46-55; fig. 2; all fig. 3 and abstract)

Regarding claim 32, Taormina discloses a communications system comprising: a plurality of regional ground stations (fig. 1); and a plurality of user terminals with the service area receiving communication signals from the satellite; a plurality of satellites located in an elliptical sub-geostationary orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (fig. 2, fig. 3A; col. 4, lines 25-63). Taormina is silent to disclose said satellites generating a plurality of beams with variable beam widths that vary as a function of orbital position to obtain a substantially uniform cell size covering said service area. However, Roedere discloses generating a plurality of beams with variable beam widths that vary as a function of orbital position to obtain a substantially uniform cell size covering said service area (see col. 6, lines 43-51; col. 7, lines 8-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Roedere to Taormina in order to provide service users continuously.

Regarding claim 33, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses wherein said plurality of satellites operate using a frequency of GSO satellite (see col. 7, lines 22-24).

Regarding claim 34, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. Taormina also discloses wherein said plurality of satellite do not operate in GSO satellite avoidance zone (see col. 4, lines 46-55).

Art Unit: 2682

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taormina et al. (US patent Number 6257526) in view of Roedere et al. (US Patent Number 5151706) and further in view of Byrne et al. (US Patent Number 5990883).

Regarding claim 2, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. They are silent to disclose the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet. However, Byrne discloses the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet (see fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Byrne to the prior arts in order to provide multimedia program content to users.

4. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taormina et al. (US patent Number 6257526) in view of Roedere et al. (US Patent Number 5151706) and further in view of Schloemer (US Patent Number RE37140).

Regarding claims 8 and 18, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. They are silent to disclose the satellites are disabled when coextensive with a geostationary orbit. However, Schloemer discloses the satellites are disabled when coextensive with a geostationary orbit (see col. 2, lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Schloemer to the prior arts in order to keep satellites in their proper orbits.

Art Unit: 2682

5. Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taormina et al. (US patent Number 6257526) in view of Roedere et al. (US Patent Number 5151706) and further in view of Castiel et al. (US Patent Number 6263188).

Regarding claims 11 and 21, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. They are silent to disclose the plurality comprising 5 satellites. However, Castiel discloses the plurality comprising 5 satellites (see col. 13, lines 8-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Castiel to the prior arts in order to provide continuous coverage to the service area.

6. Claims 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taormina et al. (US patent Number 6257526) in view of in view of Roedere et al. (US Patent Number 5151706) and further in view of Wainfan et al. (US Patent Number 6339707).

Regarding claim 16, Taormina discloses a communications system modified by Roedere comprising all of the limitations as claimed. They are silent to disclose a primary market area having an elevation greater than thirty degrees. However, Wainfan discloses a primary market area having an elevation greater than thirty degrees (see col. 3, lines 62-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Wainfan to the prior art so that satellite service may be more efficiently realized.

Regarding claim 24, Taormina discloses a method modified by Roedere comprising all of the limitations as claimed. They are silent to disclose wherein said step of defining at least two satellite orbits comprises defining at least four orbits. However, Waifan shows at least four orbits

Art Unit: 2682

(see fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Wainfan to the prior art so that satellite service may be more efficiently realized.

Response to Arguments

7. Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument on page 6, **applicants** argue: "handing over operation is recited in conjunction with varying the beam width during the operation within the active arc of the orbit to maintain fixed sized cells. Since the variable beam widths to obtain a substantially uniform cell size aspect is also recited, it is respectfully submitted that searching claims 22 and 24 along with group I claim will not place an additional burden on the examining corps."

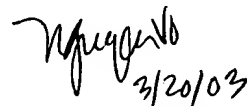
Examiner agrees with the Applicants.

Conclusion

8. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nguyen Q. David whose telephone number is (703) 605-4254. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703)308-6739. The fax numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for all communications.

DN
David Nguyen


3/20/03
NGUYEN T. VO
PRIMARY EXAMINER